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NOTES ON CUBAN ANOLES

The following observations on the Anoles of Santa Clara Province were made during two summers at the Harvard Biological Laboratory at Soledad, during which time four localities in the nearby Trinidad Mountains were visited.

At Soledad *sagrae* was far and away the most common species and it was present in the mountains as well, except in the thickest woods. On the palm trees around Soledad *porcatus* was also very common but was not observed in the mountains. In thick woods near Soledad *homolechis* was occasionally seen, while in similar situations in the mountains *ahli* was not rare. On all rock outcrops at Soledad and in the mountains *lucius* was common. Less restricted in habitat, and probably the second most common species both at Soledad and in the mountains was *alutaceus*. In the mountains *spectrum* was as common as *alutaceus*, but only one specimen was seen at Soledad during two summers. I found only one specimen of *equestris* myself but three were brought to me. Finally *angusticeps*, which has been taken at Soledad, was not seen at all by me.

Strangely enough, I found none of the eggs of the common *sagrae*, but found a number of eggs of the three other species common at Soledad, *porcatus*, *alutaceus*, and *lucius*.

Anolis porcatus lays its eggs in the interstices between the leaf bases of cocoanut and royal palms. Large numbers of these eggs were found by my fellow student at Soledad, Mr. Emerson. As many as 29 were found together.

Anolis alutaceus lays its eggs singly in Bromeliads. They are small, and extremely oval.

Anolis lucius glues its eggs in numbers in crevices and on the under surface of overhanging rocks of cliffs. The eggs stick to the rock and to each other.

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NOTES ON TWO CUBAN FROGS

Eleutherodactylus cuneatus and *E. ricordii* are the two most common and wide-spread of the species on the island. The latter occurs in the Bahamas and in southern Florida as well.

The two have been confused in the past but are quite distinct, *cuneatus* is much larger (females reaching 40 mm., and males 26 mm. while *ricordii* females reach only 30 mm., and males 20 mm.), has webs at the base of the toes which *ricordii* lacks, has a W-shaped scapular wart not found in *ricordii*, and the disks of the digits are not developed, whereas in *ricordii* the disks of the two outer fingers are noticeably enlarged. Finally *ricordii* has a proportionately larger tympanum.

The two are usually found in association near the banks of small streams. The one which jumps into the water to avoid pursuit is *cuneatus* and this species is

never found away from the immediate proximity of water.

The note is "chu dick, chu dick" about six times repeated, faster and faster, and more and more slurred as the frog gets out of breath, so that the emphasis eventually comes on the first syllable instead of on the second and the frog seems to end up by saying "di chu".

Eggs were found July 16, 1924, under a stone at the water's edge. There were two batches, one of 27, and one of 42 eggs, in the same place. These began to hatch July 22.

On July 14, 1925, a batch of 35 eggs was found at the same spot, but this time tightly packed in among dirt and gravel. These began to hatch July 21.

The exact date of laying is of course uncertain, but obviously the incubation period is somewhat over 7 to 8 days.

E. ricordii is frequently found along with *cuneatus*, never, however, jumping into the water. It is also found at considerable distances from the water.

On July 25, 1924, I caught seven from a colony of about a dozen, which was under two large stones and the fallen leaves of a royal palm, and was some fifty yards from a stream. I kept five of these alive in a jar with some vegetable debris.

Their call, which they gave at night from the terrarium, was a faint "put put", not unlike the final note of *cuneatus*.

The night of July 28 a batch of 25 eggs was laid. I left Soledad on July 30 and returned on August 2 and found that a second batch of 19 eggs had been laid in my absence.

The eggs of the 28th began to hatch August 7, making a period of eleven days. By August 11 all were out, making a period of ten days from the 2nd.

On August 11, 1925, I found 21 eggs in a fallen Bromeliad. These hatched six days after (August 16),

and as soon as the yolk was fully absorbed and the adult coloration assumed they were seen to be *ricordii*.

Thus *cuneatus* lays 27–42 eggs under stones along stream banks, and *ricordii* lays 19–25 eggs in vegetable debris in woods.

The eggs of the two are similar, the yolk being about 2 mm. in diameter, and the outer envelope eventually reaches 4 mm. No trace of external gills could be made out in either species.

Doubtless the habits of *ricordii* in Florida are the same as in Cuba.

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A NEW OPHIDIAN RECORD FOR ARIZONA

Two specimens of a snake species I had not previously seen were brought to me in 1925, which aroused interest because of their extreme slenderness and unusual appearance. The first of these was brought in preserved condition by Mr. S. H. Beattie of Tubac, Arizona, who reported that it was taken in April in Calabasas Canyon. This canyon extends from a point in the Santa Cruz Valley about 50 miles south of Tucson, in a southwesterly direction to and across the international boundary west of Nogales, in the Tumacacori Mountains.[1] The snake was captured only two or three miles from the border, within the state of Arizona. It measures 1328 mm. in total length; tail, 541 mm., and about 14 mm. in diameter at the widest part.

In June, 1925, a living specimen was brought in by Mr. W. W. Akers of Tucson, who states that it was captured in the edge of this city. The graceful beauty of this slender living snake further aroused our curiosity and led to an immediate attempt to identify it, the preserved specimen not having been classified as yet. Some difficulty was met with in this task, as it

could not be located in any of the available reference works. Even so recent and voluminously complete a work as Van Denburgh's "Reptiles of Western North America" was of no avail. That it was a "coach-whip" of some sort seemed to be as near as we could get to its identity. Finally while I was on vacation my assistant, Mr. A. A. Nichol, located it definitely in Ditmar's "Reptiles of the World". That these snakes are of the species *Oxybelis acuminatus* admits of little doubt, and that they are the first specimens recorded for the United States we believe to be a fact.

The living specimen, on our learning its identity, was at once placed in quarters sufficiently commodious so that limbs of palo verde could be provided for it, and on these branches this slender creature spends its days. Although rated as mildly poisonous, it has been freely handled and shows little disposition to bite its human caretakers. It feeds on some of the common small lizards when these are provided for it, kills by gripping them tightly well back in the mouth until the poison has done its work, and then swallows the prey as described by Ditmars. This specimen is about 1315 mm. in total length; tail 438 mm., but it is evident that a portion of the latter is missing. By comparison of proportions, using the other specimen as a standard, this one should have a tail length of about 601 mm., and a total length of about 1478 mm. It is about 14 mm. in vertical diameter, and 10 mm. in horizontal diameter. It can pass readily between two pins standing but 10 mm. apart without noticeable constriction of the body.

Since 1478 mm. equal 59 and a small fraction inches, we may say in more familiar language that this snake is five feet in length and scarcely as large as one's finger. The neck for a distance back of the head is in fact about the size of a small ordinary pencil.

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NOTES ON SOME UNCOMMON SNAKES OF SOUTHERN ARIZONA

In southern Arizona there occur a number of small snakes which are mistaken by the average person for our small Sonoran Coral Snake, *Micrurus euryxanthus*. Such mistakes not infrequently result in there being brought to the writer snakes which are much less common than the Coral Snake. Two such specimens have thus come to hand of a species which, while probably not particularly rare, is yet so seldom seen that but little is known of its habits and food. This is the Banded Burrowing Snake, *Chilomeniscus cinctus* Cope.

In June, 1922, a living specimen of this snake was brought to me from Sabino Canyon, Santa Catalina Mountains, some 15 miles northeast of Tucson. The men who captured it reported that two were seen in loose sandy soil near the creek, and that they could travel so rapidly beneath the sand that difficulty was had in capturing them, one in fact being bisected by the shovel in the necessarily hasty digging. The live specimen was placed in a dish of sand in the laboratory, in which it would quickly burrow out of sight, its shovel-like nose aiding it effectively. (Notes taken at the time have been lost, and the record of this specimen is from memory.) It remained beneath the sand always by day, but evidently appeared on the surface by night. When signs of distress, interpreted as due to dryness, were noticed, the sand was moistened, after which the animal appeared to be contented. Different insects, a list of which I do not remember, were offered as food but refused, and finally it became necessary to preserve it as a museum specimen. This one measures in total length 248 mm.; length of tail 25 mm., which is near the maximum recorded by Van Denburgh.

On May 8, 1925, a freshly killed specimen of *C. cinctus*, measuring in total length 207 mm.; tail 27 mm., was brought to me by Mr. S. W. Armstrong, of the

University of Arizona. This snake was crossing the pavement, at night, some four or five miles south of Tucson, when struck by a balloon-tired car and stunned, but not crushed. Van Denburgh says of this species, "Almost nothing has been recorded regarding the habits of this little snake. It is said to burrow in the ground and live on the larvae of ants." A slight bulge being evident in the body, the stomach of this specimen was opened and found to contain two female specimens of a peculiar cockroach of the southwest, *Arenivaga sp.* These were in condition for identification as to genus, but three or more species of the genus occur here and specific determination could not be made by Mr. Morgan Hebard, to whom they were referred. These cockroaches, especially the wingless females, are underground forms. The winged males are occasionally taken at lights.

Earlier in the same season that the first *C. cinctus* was received, a specimen of the rare *Phyllorynchus browni* Stejneger was secured. This was brought to Tucson by a Papago Indian from near San Xavier Mission, a few miles southwest of the city. Only four specimens of this species have been previously recorded, all from near Tucson, and two of them from San Xavier Mission. The notes on this specimen have vanished with those on the first *C. cinctus*. This small reptile was also accustomed to live in a burrow in the soil provided for it. All attempts to find a suitable or acceptable food for it failed. After a number of weeks in the laboratory, apparently in good condition, it perished while I was out of the city for a few days and was not in condition to preserve on my return, so not even its size is on record.

On June 15, 1925, Mr. W. M. Burhans of Tucson captured another specimen of *P. browni*. This one came into the engine room of a local ice plant at 2 a. m. Its length is 345 mm.; tail, 45 mm. It is thus slightly larger than the single record given by Van Denburgh.

On receipt of this specimen the following notes were made from the living animal, which appear to show that the published description was from a preserved and somewhat faded specimen. "Ground color above is not white, but buffy, light near the brown patches and along the mud-dorsal line. The dark powdered' specks are on this buffy ground and the darkest portion of the light ground is similar to the lightest central portions of the rounded seal brown blotches."

This beautiful little leaf-nosed snake jerks or whips from side to side very actively when disturbed and emits a tiny explosive hiss. Its peculiar square nose is used in working a burrow into the soil. Knowing the rarity of this species, so far at least as recorded specimens go, it was planned to take great care of this one and to endeavor earnestly to determine its natural food. After but six days, during which various insects were refused, it died during a very warm night while confined in a large dish in which a quantity of moist dead leaves were contained. It was in excellent condition the evening before but apparently the heat and humidity became excessive; or it may have perished from a combination of the heat and humidity with carbon dioxide from decay of the leaves. This, the sixth, and largest, recorded specimen of *P. browni*, is in preservative in the University of Arizona Museum. It is hoped that further opportunity to make observations may come and that we shall be more successful in getting results.

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